REMARKS UNDER 37 CFR § 1.111

Formal Matters

Claims 146-154 are pending after entry of the amendments set forth herein.

Claims 22, 24-31, 33-39, 49, 51-58, 60-67, 69-76, 78-84, 103, 105-113, 115-118, 121-123, 125-128 and 131-145 were examined and rejected. No claims were allowed.

New claims 146-154 are added to more distinctly claim the invention. Support for new claims is found in the previously pending, now canceled claims and throughout the specification, particularly at: page 5 lines 30 to page 6 line 10, page 6, line 20 to page 7, line 3, and page 9 lines 3-14.

Claims 22, 24-31, 33-39, 49, 51-58, 60-67, 69-76, 78-84, 103, 105-113, 115-118, 121-123, 125-128 and 131-145 are canceled without prejudice to renewal, without intent to acquiesce to any rejection, and without intent to surrender any subject matter encompassed by the canceled claims. Applicants expressly reserve the right to pursue subject matter encompassed by all or any of the canceled claims not pursued in this application or in one or more continuing applications.

The attached page captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE" shows the amendments made herein.

No new matter has been added by the new claims. Accordingly, their entry by the Examiner is respectfully requested.

Applicants respectfully request reconsideration of the application in view of the amendments and remarks made herein.

Rejections under 35 U.S.C. §102/103

Claims 22, 24, 26-29, 31, 33, 35-38, 40, 42, 44-47, 49, 51, 53-56, 58, 60, 62-65, 67, 69, 71-74, 76, 78, 80-83, 85, 89-92, 94, 96, 98-101, 103, 105, 107-110 and 113-121 were rejected under 35 U.S.C. §102(a), §102(b) and 103(a) because the claims recite the term "degenerate variant", which is interpreted by the Office to mean any sequence variant.

Solely for the purposes of expediting prosecution and not as an acquiescence to the rejection, the term "degenerate variant" is not present in new claims 146-154.

35 U.S.C. §112, first paragraph- written description

Claims 22, 24-31, 33-39, 49, 51-58, 60-67, 69-76, 78-84, 103, 105-113, 115-118, 121-123, 125-128 and 131-145 stand rejected as allegedly not described in such a way as to reasonably convey to one skilled in the relevant art that that inventor(s), at the time the application was filed, had possession of the claimed invention. This rejection is applied to new claims 146-154 and respectfully traversed.

Summary of the outstanding rejection

In the first Office Action (mailed November 29, 2000), the Office asserted the specification discloses the recited SEQ ID NOS and that that claims are "directed to full length cDNA, sequences that hybridize to the recited SEQ ID NOS, sequences from other species, mutated sequences, allelic variants, and splice variants." The Office Action further asserted that with the exception of the specific SEQ ID NOS, the "skilled artisan cannot envision the detailed chemical structure of the encompassed polynucleotides and/or proteins, regardless of the complexity or simplicity of the method of isolation." In making the rejection, the Office cited *Amgen, Inc. v. Chugai Pharmaceutical Co.*, *Fiers v. Revel*, *Fiddes v. Baird*, and *University of California v. Eli Lilly and Co.*

In the final Office Action (mailed October 2, 2001), the rejection was maintained and it was stated that "the Office guidelines for compliance with the written description requirement of 35 U.S.C. §112, first paragraph (available at www.uspto.gov) will be enforced."

Finally, in the Advisory Action (mailed May 31, 2002), the rejection was again maintained because "a full open reading frame is not described that is related to the claimed invention and therefore the claims (including newly filed claims 146-154) read on undescribed full open reading frames and their encoded polypeptides due to the presence of open language (consisting of) in all claims". For the purposes of this response, applicants will assume that by "consisting of" the Office means "comprising", since "comprising" and not "consisting of" appears in the claims in question.

This rejection is traversed as applied and as it might apply to claims 146-154.

The '648 specification provides an adequate written description of the invention recited in claims 146-154, and further shows that the inventors indeed had possession of the invention of claims 146-154 as of the filing date of the '648 specification in March 2000, as will be asserted below.

The Law of Written Description

35 U.S.C §112, ¶ 1 requires that the specification shall contain a written description of the invention, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.

As interpreted by the court in *Vas-Cath*, this "written description" requirement of the statute demands that an application "convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed". [1] In determining whether the specification meets the written description requirement for the invention now

claimed, "[t]he primary consideration is factual and depends on the nature of the invention and the amount of knowledge imparted to those skilled in the art by the disclosure."[2] (emphasis added).

As such, a proper assessment of whether the instant patent application (Serial No. 09/297,648; the '648 specification) provides an adequate written description of the invention of claims 146-154 must include a determination of the relevant facts and an assessment of whether the '648 specification would have provided sufficient description of the invention to allow a Skilled Person to conclude that the Inventors were in possession of the invention. Applicants note that the law requires that the Office must consider declarations under 37 C.F.R. §1.132 among the relevant facts in making this assessment.[3]

Applicants now turn to the case at hand.[4]

The Office uses an impermissible standard for written description

As noted above, in the first Office Action the Office states, in section 7, that "with the exception of SEQ ID NOS:65, 253, 329....., the skilled artisan cannot envision the detailed chemical structure of the encompassed polynucleotides and/or proteins, regardless of the complexity or simplicity of the method of isolation". The Office has used this statement as a basis for the written description rejection.[5]

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[1] *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-1564 (Fed. Cir. 1991).
[2] *In re Wertheim*, 191 U.S.P.Q. 90, 96 (C.C.P.A. 1996).
[3] *In re Alton*, 37 U.S.P.Q.2d 1578 (Fed. Cir. 1996).
[4] In their arguments, Applicants have relied upon the disclosure of the '648 specification, which entered the U.S. national phase of prosecution in March 10, 2000. The instant application, in substance, is identical to a parent PCT application filed on January 28, 1999 and claims priority to a series of provisional patent applications. In basing their arguments upon the specification of the March 2000 entry into the U.S. national phase, applicants in no way suggest that the priority applications are not equally sufficient in their support and description of the claimed invention.
[5] Applicants note that the Office Action's arguments with respect to proteins is not relevant. The claims of the instant application are directed to polynucleotides, not proteins.

The standard for written description has been established over several years of court cases such as *Vas-Cath Inc. v. Mahurkar*[6] and *In re Wertheim*[7] and has culminated in the publication of the "Written Description Guidelines" Federal Register Vol. 66 No. 4, dated January 5, 2001 to which the Office must adhere to when making a written description determination.

The law is of written description is not whether or not a skilled artisan can "envision the detailed chemical structure of the encompassed polynucleotides and/or proteins, regardless of the complexity or simplicity of the method of isolation". The Examiner has not provided any factual evidence to support the rejection, and thus the statement with regard to what one of ordinary skill in the art would know must be based on the Examiner's personal knowledge. We hereby request an affidavit under 37 C.F.R. §1.104(d)(2) to support this assertion.

As stated above, the law requires that the specification shall contain a written description of the invention, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same. To this end, applicants provide herewith the Declaration of Dr. Christopher Somerville under 37 C.F.R. § 1.132. Dr. Somerville's Declaration is evidence of how a Skilled Person, in March 2000, would view the description of the claimed invention in the '648 specification. Dr Somerville, in his declaration, has stated that this standard would be met in the instant application. (e.g. Declaration paragraph 19). Applicants note that the law requires the Office to consider this evidence as probative of how one skilled in the art would have understood the teachings of the '648 specification as it relates to claims 146-154.[8]

[6] *Vas-Cath Inc. v. Mahurkar*, 19 USPQ2d 1111 (Fed. Cir. 1991).
[7] *In re Wertheim* 191 U.S.P.Q. 90 (C.C.P.A. 1996)
[8] *In re Alton*, 37 U.S.P.Q.2d 1578 (Fed. Cir. 1996).

The Office has impermissibly used lack of description of an individual single species to argue that a genus of species containing the single species is not described

The language of the first Office Action and the Advisory suggests that the Office is impermissibly reading a limitation into the claims (i.e., that the claims are "directed to full-length cDNA"), and then focusing upon whether the specification describes such a full length cDNA or a nucleic acid containing a full open reading frame (see the Advisory Action, section 5). Applicants submit that this is not proper.

Specifically, the Advisory Action states that "The rejections [sic] under 35 U.S.C. § 112, first paragraph is maintained because a full open reading frame is not described that is related to the claimed invention and therefore the claims...read on undescribed full open reading frames and their encoded polypeptides due to the presence of open language...in the claims"[9].

The law of written description does not requires that the specification describe all embodiments that are encompassed by the claims. The law does not require that the specification identify a "full open reading frame" in order to satisfy the written description requirement of 35 U.S.C. §112, ¶1. The Written Description Guidelines" Federal Register Vol. 66 No. 4, dated January 5, 2001 and the "Synopsis of Application of Written Description Guidelines" (hereafter "Synopsis"; posted on the USPTO world wide website on March 1, 2000) do not support this assertion. The Synopsis states that "For example, a cDNA's principle attribute would *include* its coding region." (emphasis added)[10] Applicants again note that the claims are not so limited to cDNAs. Furthermore, the Synopsis is not stating that a coding region is the only attribute of a polynucleotide, but rather is an example of attributes, since these "include" a coding region.

The instant claims are not limited to cDNAs, but rather are directed to a genus of polynucleotides, all of which share the feature of "at least 50 contiguous nucleotides of SEQ ID NO:253". Dr. Somerville's declaration explains that one of ordinary skill in the art would

[9] From page 2 of the Advisory Action.
[10] Synopsis of Application of Written Description Guidelines, page 31.

recognize disclosure of SEQ ID NO:253 as fully representative of the genus of the claimed invention since it is a complete disclosure of the common structural feature (i.e., at least 50 contiguous nucleotides of SEQ ID NO:253) of the claimed invention. (Declaration paragraph 18). Furthermore, Dr. Somerville's declaration evidences that one of ordinary skill in the art would recognize that the vector containing a cDNA containing the sequence of SEQ ID NO:253 and deposited with the A.T.C.C. is an example of a polynucleotide containing SEQ ID NO:253 having flanking sequences and as being fully representative of large polynucleotides that can serve as probes or starting materials for probes in cancer diagnostics. (Declaration paragraph 18). In addition, Dr. Somerville states that a Skilled Person could readily determine whether a given polynucleotide is encompassed by the claim.

As such, in Dr. Somerville's opinion, the '648 specification, when considered from the point of view of a Skilled Person, provides adequate written description of the invention of claims 146-154, and that the inventors indeed had possession of the invention of claims 146-154 as of the filing date of the '648 specification in March 2000.

Thus as, Dr. Somerville has opined, the instant specification has adequately described a vast variety of polynucleotides, for example probes, vectors, clones, restriction fragments and PCR products that contain at least 50 nucleotides of SEQ ID NO:253. The full length cDNA is merely one of many species encompassed within the claimed genus.

The Office Action cites no basis in the law (nor are the applicants aware of any basis) for the proposition that a genus which is described in the specification nevertheless fails to meet the written description requirement because one single species is not disclosed. In fact, *In re Angstadt*[11] states that applicants' specification need not describe every possible species within a broadly claimed genus in order to satisfy the requirement of 35 U.S.C §112, first paragraph. As stated by the court in *In re Alton*, "If a person of ordinary skill in the art would have understood the inventor to have been in possession of the claimed invention at the time of filing, even if

[11] 537 F.2d 498, 502-503 (CCPA 1976)[11]

every nuance of the claims is not explicitly described in the specification, then the adequate written description requirement is met."[12]

In the field of recombinant DNA technology, making and using specific nucleic acid sequences routinely involves incorporating the sequences into larger molecules, including cloning and expression vectors and PCR products. Moreover, these specific nucleic acid sequences retain at least one utility, e.g., as probes for diagnosing cancers. The variety of useful larger molecules comprising a specific nucleic acid sequence is almost limitless. In this field, the practical reality is that larger nucleic acid molecules into which an inventive nucleic acid sequence can be inserted should be viewed as the functional milieu in which an inventive sequence can be made and used. In this context, inventors of nucleic acids would be deprived of meaningful patent protection if they were limited to claims directed to only the specific nucleic acid.

Here, the Office concludes that since the specification does not describe the sequence of the full-length open reading frame of a cDNA comprising SEQ ID NO:253, and the claims encompass such a sequence, the specification does not provide an adequate written description of the claimed invention. However, this is only a particular species of the genus of the claimed polynucleotides. The lack of written description of a single species is not sufficient to support a rejection of the claimed genus.[13]

The claims are adequately described in the specification

The law requires that the specification shall contain a written description of the invention, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.

Dr Somerville states that one of ordinary skill in the art would recognize the disclosure of SEQ ID NO:253 as fully representative of the genus of the claimed invention since it is a

[12] *In re Alton,* 76 F.3d 1168, 1177 (Fed. Cir. 1996).
[13] *In re Angstadt,* 537 F.2d 498, 502-503 (CCPA 1976)[13]

complete disclosure of the common structural feature (i.e., at least 50 contiguous nucleotides of SEQ ID NO:253) of the claimed invention. (Declaration paragraph 18). Dr Somerville also states that one of ordinary skill in the art would recognize that the vector containing a cDNA containing the sequence of SEQ ID NO:253 and deposited with the A.T.C.C. is an example of a polynucleotide containing SEQ ID NO:253 having flanking sequences and as being fully representative of larger polynucleotides that can serve as probes or starting materials for probes in cancer diagnostics. (Declaration paragraph 18). In addition, Dr. Somerville states that a Skilled Person could determine whether a given polynucleotide is encompassed by the claim. (Declaration paragraph 20).

Dr. Somerville concludes that the specification provides sufficient written description of the characterizing details sufficient to distinguish the claimed genera of polynucleotides from all others. (Declaration paragraph 18) Thus, the genera of claimed polynucleotides are readily recognizable by one of ordinary skill in the art.

Dr. Somerville's Declaration indicates that the requirements for written description have been met, and, as such, the claims are adequately described in the instant specification. The Office must consider the Somerville Declaration and any rebuttal of the Somerville Declaration must articulate adequate reasons, and must consider the totality of the record in doing so.[14]

The subject matter recited in the instant product by process claim is adequately described

In the final Office Action, the Office cites section 6 from the Written Description Guidelines (Federal Register Vol. 66 No. 4 pages 1099-1111, January 2001) and stated that merely claiming a composition in a product by process format does not relieve the applicants from the duty of providing adequate written description of the claimed product. The Office uses this statement as a basis for the rejection of product by process claims 122-131. Applicants respectfully traverse this rejection as it may be applied to claim 152.

[14] *In re Alton*, 37 U.S.P.Q.2d 1578 (CAFC 1996).

Claim 152 is directed to an isolated polynucleotide comprising at least 50 contiguous nucleotides of SEQ ID NO:253 obtained by an amplification process using an oligonucleotide primer derived from SEQ ID NO:253 or its complement. As such, every species of polynucleotide encompassed by the claim will have a common structural feature: at least 50 contiguous nucleotides of SEQ ID NO:253. Since the claim recites a structural feature, which feature must be present in order to amplification to occur using the primer, Applicants assert that they are not *merely* claiming a composition in a product by process format: the composition is also claimed using structural feature. Since this structural feature is described in the specification, and all species encompassed by the claim have this structural feature, Applicants assert that the claim is adequately described and the rejection may be withdrawn.

The facts of the cited cases are not applicable to the instant claims

According to 35 U.S.C §112, ¶ 1, written description is analyzed from the point of view of one of skill in the art at the time of filing.

In his declaration, Dr. Somerville concludes that since the field of recombinant DNA technology is a rapidly evolving, and most major technological advances have been made in the last 20 years (e.g. computer programs for comparing nucleic acids), a Skilled Person had a dramatically higher skill level in March 2000 as compared to the filing dates of the applications at issue in the cases that a were cited against the Applicants in the first Office Action (*i.e. Amgen Inc. v. Chugai Pharmaceutical Co., Fiers v. Revel, Fiddes v. Baird, and University of California v. Eli Lilly and Co*). (Declaration paragraph 47)

Because of the advances in the art, Dr. Somerville states that he does not believe that a statement regarding what one of ordinary skill can or cannot do in the above cases would be factually correct with respect to the Skilled Person in March 2000. (Declaration paragraph 47)

In view of this evidence, Applicants submit that assertions of the ability of one of ordinary skill in the art based on the cited cases is not proper. As such, and further since the facts of the cited cases and the facts in the instant case differ dramatically, Applicants submit that the

conclusions reached as to the sufficiency of the written description of the applications considered in the cases cited by the Office have little or no bearing on the instant case.

Conclusion

Applicant submits that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone the undersigned at the number provided.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-0815, order number 23001481.

Respectfully submitted,
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Date: November 1, 2002

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

All currently pending claims are cancelled without prejudice to renewal.

New claims 146-154 have been added.